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AQUATIC ENVIRONMENT AND FISHERIES INPUT INTO THE REGIONAL PHOSPHATE ENVIRONMENTAL IMPACT STATEMENT - SITE SPECIFIC MINING PLANS

Environmental Description and Mining Impacts

William S. Platts
Zone Fishery Biologist

March 1975

Caribou National Forest

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TABLE OF CONTENTS

Page No.

Introduction..... 1
Simplot - Middle Sulphur Canyon..... 2
Simplot - Swan Lake Gulch..... 3
Simplot - North Trail Canyon..... 4
Simplot - Woodal Peak..... 5
Monsanto - Henry-South Central Continuation..... 6
Alumet (Earth Sciences) - Lanes Creek..... 7
APC - Georgetown Canyon..... 8
Lucky Boy (Wood Canyon, Trail Creek, Middle Sulphur Canyon).... 9
Stauffer - Wooley Valley Units One and Four.....10
Alumet (Earth Sciences) - Diamond Creek.....11
Becker Industries - South Maybe Canyon.....13
Becker Industries - Champ Mine.....14
Becker Industries - Mountain Fuel Mine.....15
Earth Sciences - Paris-Bloomington.....16
FMC - Dry Valley Mine.....17
International Mineral Corporation - Husky No. One.....18
Monsanto Corporation - Henry North Continuation.....21
Monsanto Corporation - Trail Creek.....22
Monsanto Corporation - Caldwell Canyon.....23
Monsanto Corporation - Blackfoot Bridge.....24
Simplot - North Trail Canyon.....25
Simplot - Middle Sulphur Canyon.....26
Stauffer - Wooley Valley Unit Three.....27
Stauffer - Rassmussen Ridge.....29

AQUATIC ENVIRONMENT AND FISHERIES INPUT INTO THE REGIONAL PHOSPHATE ENVIRONMENTAL IMPACT STATEMENT - SITE SPECIFIC MINING PLANS

ENVIRONMENTAL DESCRIPTION AND MINING IMPACTS

Chapters II and III

William S. Platts
Zone Fishery Biologist
March 1975

INTRODUCTION

The charge was directed to the Fisheries Biologist to analyze 23 mining plans and submit present aquatic environmental and fisheries descriptions prior to March 1, 1975 and predict the environmental impacts to the aquatic environment and fisheries by March 12, 1975. This report fulfills this charge.

This report should be considered and interpreted as the best information available at this time. Fisheries information is lacking on most of the specific mining sites. Soils-hydrologic information was also not available to help in this analysis. To complicate the aquatic fishery analysis, most of the site specific mining plans contained little of the information needed. Certain mining plans offer much more interpretation than others.

This description and prediction of mining impacts should be evaluated knowing the restrictions and lack of good quantified data behind it. As comprehensive aquatic-fishery information is gained through intensive studies, this report will be outdated and subject to review and change. By 1978 this report should have little credence unless a reevaluation is made.

The report is written to site specific mining company reports on their own specific mining sites. Two chapter insets from the EIS format are addressed: One on Descriptions of the Existing Natural Environment (Chapter II) and one on the Predicted Impacts on the Natural Environment from Proposed Mining Plans (Chapter III).

PART I REGIONAL STATEMENT

A. Simplot - Middle Sulphur Canyon

Chapter II: Description

7. Aquatic Environment and Fisheries

The Woodal Peak Mining area is located six miles east of Soda Springs. The mining area covers ephemerial drainages and no onsite waters support a fishery. Very little surface water from the watersheds to be mined reaches any major water system.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface waters from this area reaching off-site major water systems is minor. The mining plans state that water runoff from the disturbed or to be disturbed areas will not enter any receiving waters. If the proposed soil erosion control and reclamation measures are adherred to, there will be no detrimental impact on fisheries except for possible airborne particulate matter which is considered, at this time, very minor. Transportation systems would have no effect on fisheries and aquatics, providing they are routed away from the lakes and reservoirs. If these underground waters were intercepted causing drought conditions or loss of quality in Swan Lake and Reservoir, the fisheries would be degraded.

B. Swan Lake Gulch

Chapter II: Description

7. Aquatic Environment and Fisheries

The Swan Lake drainage contains a small lake and a shallow reservoir. Swan Lake is about 3/4 acre and stocked annually with hatchery catchable size rainbow trout. The lake is rated three as a fishery. The lake waters are tapped, via an underground pipe, and used for downstream cropland irrigation. Thus, the water level is not stable. The maximum water depth is 40 to 48 feet. Without continual fish stocking, this pond would not support a fishery.

Swan Reservoir is shallow and marshy with a maximum depth of about three feet. The reservoir contains a sucker population, but salmonids fail to survive through the winter. Swan Creek is ephemerial most of the year below the water diversions and does not support a fishery.

Chapter III: Impacts

A maximum runoff in May of 80 cfm is expected from the headwater drainages to the mining site. The flow will be channeled on to the mine site. Sediment debris basins are being constructed to intercept transported sediment. The mining plan calls for conventional soil erosion and stream siltation controls during construction, operations, and stabilization.

The sediment debris basins are small and shallow and would not support a fishery. The major impact on existing fisheries would be possible release of turbid waters from the debris basins and from airborne particulate matter from the disturbed soils. The particulate pollutants are difficult to evaluate, but if they enter the lake on the reservoir, existing and potential fisheries could be displaced. If the open pit mining would intercept or change quality of subsurface water flows destined for Swan Lake or Reservoir, the fisheries will be degraded.

C. Simplot - North Trail Canyon

Chapter II: Description

7. Aquatic Environment and Fisheries

The North Trail Canyon mining area is located about six miles east of Soda Springs. The mining area covers ephemerial drainages and no onsite waters support a fishery. Only small amounts of surface water from the watersheds to be mined reach any major water system.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface waters from this area reaching off-site major water systems is minor. There will be no offsite detrimental impact on fisheries except for possible airborne particulate matter and potential interception of the subsurface water flows that feed into Swan Lake and Reservoir. The transportation system would have no effect on fisheries and aquatics, provided they are routed away from the lake and reservoir.

D. Simplot - Woodal Peak

Chapter II: Description

7. Aquatic Environment and Fisheries

The Woodal Peak mine is located near Conda Idaho (east of). The mining area covers ephemerial drainages and no onsite waters support a fishery. Only small amounts of surface water from the watersheds to be mined reach any major water system.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface water from the mining area reaching offsite major water systems is minor. There will be no direct offsite detrimental impact on fisheries except for possible airborne particulate matter. The transportation system should have no effect on aquatic resources.

E. Monsanto Henry (South Central Continuation)

Chapter II: Description

7. Aquatic Environment and Fisheries

The Henry-South Central Continuation is east of Long Valley. The mining area covers ephemerial drainages, and no onsite waters support a fishery. Only small amounts of surface water from the watersheds to be mined reach any major water system.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface water from the mining area reaching offsite major water systems is minor. There will be no off-site detrimental impact on fisheries except for possible air-borne particulate matter. The transportation system should have no effect on aquatic resources.

F. Alumet - Lanes Creek (Earth Sciences)

Chapter II: Description

7. Aquatic Environment and Fisheries

The Lanes Creek mining area lies north of Lanes Creek about 600 yards from the stream. The mining area covers ephemerial drainages and no onsite waters support a fishery. Surface water does leave the watersheds and enters Lanes Creek during snow melt and storms. Livestock stress on Lanes Creek is the dominant degrading factor at present.

Lanes Creek is one of the better streams within the phosphate study area and is rated four. Lanes Creek provides spawning and rearing areas for migrating cutthroat trout from the Blackfoot system. This stream also contains a resident cutthroat trout population and sculpin. During May and June, large cutthroat trout spawners (two to five pounds) use this system to deposit their eggs.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located on a perennial surface water source, there will be no direct effects on any fishery resource. Surface water from the disturbed mining area could reach Lanes Creek. If surface water reaches Lanes Creek, based on the history of other mining operations, Lanes Creek will be degraded. This pollution could add to the increasing increment of pollution to the Blackfoot River tributaries, and in turn the complete Blackfoot system is then affected. Based on near by mining operations, this mining operation will degrade the Lanes Creek system.

G. APC - Georgetown Canyon

Chapter II: Description

7. Aquatic Environment and Fisheries

Georgetown Creek has been heavily degraded from past mining operations. Channel alterations are still and will continue to be in the degraded state, but the once toxic water conditions have almost totally disappeared.

Georgetown Creek supports the highest poundage of salmonids per stream length, found in the study area. The stream in undisturbed areas contains excellent populations of rainbow trout, cutthroat trout (Henry's Lake variety), brown trout, Eastern brook trout, and sculpin. Roads have altered long segments of the stream channel.

The stream receives a five rating because of its large size and high fish standing crops. Livestock cause some stress in the upper section. Georgetown Creek is being disturbed below the Forest boundary by the construction of a large sprinkling system being constructed by the Georgetown Irrigation Company and the U.S.D.A. Soil Conservation Service. This sprinkling system is to be completed in the summer of 1975. This system will take all the water from the creek except four cfs at the point of diversion which is just below the Forest boundary. Fisheries in and below this area of diversion will be degraded.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

During the past, mining and milling operations killed the trout population in Georgetown Creek below the mill. Since mining and milling operations have ceased, trout populations have returned. Because the tight V-shaped canyon reduces the possibility of constructing adequate pollution abatement facilities combined with the closeness and steep slopes of the ore body, a continuation of mining and milling will eliminate the Georgetown Creek fishery.

H. Lucky Boy (Wood Canyon, Trail Creek, Middle Sulphur Canyon)

Chapter II: Description

7. Aquatic Environment and Fisheries

The Lucky Boy mining leases cover a wide area east and south of Soda Springs. The mining area covers mainly ephemerial drainages and no onsite water supports a fishery. Small amounts of surface waters from mined watersheds could reach the Bear River system.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface water from the mined area may reach the Bear River system during snow melt and storms. If so, this would be degrading to the Bear River system, but the effects are considered minor. The transportation system should have no effect on aquatic resources.

I. Stauffer - Wooley Valley Units One and Four

Chapter II: Description

7. Aquatic Environment and Fisheries

The Unit One mining area drains directly into the Blackfoot River. The Unit Four mining area covers part of the headwaters of Angus Creek. Environmental conditions are well documented in Angus Creek (Platts 1970a, 1970b, and 1973), and these could be referred to for additional background information.

Angus Creek is rated four and contains cutthroat trout, sucker, dace, redside shiner, and sculpin. The stream from the lower end of the Angus narrows upstream to within about 800 yards of the upper spring is dominated by cutthroat trout. Downstream from the Angus narrows to the confluence with the Blackfoot River, the fish species composition is dominated by dace, redside shiner, and sculpin. Angus Creek is important as a feeder of migrant cutthroat trout to the Blackfoot systems. The Stauffer Mining Company has recently constructed a small reservoir near the headwaters of Angus Creek which has been stocked with cutthroat trout. Trout survival and growth has been excellent averaging about 12 inches at two years of age. Angus Creek averages 1,200 cutthroat trout per mile.

The headwaters of Angus Creek has received accelerated sediment and petroleum products from past mining operations. The completed Aquatic-Fishery Studies demonstrate the stream is receiving degradation from mining and livestock grazing.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

The mining area in Unit One has a debris basin intercepting sediment and turbid waters that would leave the disturbed area. No degrading impacts from polluted waters are reaching the Blackfoot River at the present time.

The mining area in Unit Four has caused large quantities of sediment, turbid water, and oils to enter Angus Creek. Beaver dams plus a newly constructed sediment debris basin has stopped most of this material from moving down Angus Creek. As the mining continues and even after mining ceases in Unit Four, there will continue to be a degrading effect on the Angus Creek environment. Unless this mining program is carefully programmed and monitored, Angus Creek will probably be badly destroyed.

PART II ALUMENT (EARTH SCIENCES)

A. Diamond Creek

Chapter II: Environmental Description

7. Aquatic Environment and Fisheries

The mine area is located at the southeast end of Upper Valley in the Diamond Creek drainage. Diamond Creek contains cutthroat trout (Henry's Lake variety), brook trout, whitefish, and sculpin. This stream was once a very important tributary to the Blackfoot River but appears to have become degraded in recent years. The environmental loss of productivity is probably contributed to livestock influences, changes within beaver impoundments, and modifications by beaver impoundments. This stream has excellent potential to rebound to its higher potential of fish production. Presently, the stream is rated four but capable of being a five. The upper Diamond Creek channel becomes intermittent in many areas.

Diamond Creek is dominated by cutthroat trout with brook trout scattered throughout, but their higher populations are in the headwaters. Diamond Creek averages only 400 native cutthroat trout and 60 brook trout per mile.

Diamond Creek supports spawning runs of cutthroat trout from the Blackfoot system and in conjunction with its tributary, Spring Creek, is probably the most important salmonid spawning tributary in the Blackfoot system. The stream is stocked annually with the Henry's Lake cutthroat trout, but the efficiency of this stocking is unknown.

The Blackfoot River contains more fish species and more fishing pressure than any other stream in the planning unit. Fish species collected were rainbow trout, cutthroat trout, brown trout, whitefish, sucker, dace, redside shiner, carp, and sculpin. The stream is rated five and receives streamside influence from livestock.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Maximum runoff in May of 542 cfm will be channeled onto the mine site from four separate drainages. Check dams are planned to prevent excess sediment from leaving each drainage. Any flows from perennial streams will be replaced (returned) to the immediate downstream natural drainage. This water may be high in total solids. To discharge clear water into Diamond

Creek during mining, two settling ponds of at least four acres are recommended, but possible expansion of the mining operations would require ten-acre ponds. Information is not available at this time to determine if fisheries could be established in these sediment ponds. Pond water detention time will be 60 hours, so decanted water released into Diamond Creek could be highly turbid.

Because of the large amounts of subsurface water (1670 gpm) per 1,000-foot panel, these flows will need to be pumped and contained. How this water is to be managed determines if there are any benefits to be gained or degrading impacts to be received. Also, the magnitude of subsurface water pumping could cause ephemerial conditions in Diamond Creek. This would also degrade the Blackfoot River system.

The major potential impact on fisheries as outlined in the mining plan is erosion products. However, change in water flow patterns could be the major problem. Other possible degrading factors are water impoundment, channelization, channel changes, stream drought conditions, and possible toxic lechates.

Different transportation systems are proposed for mine access and ore removal. The proposed road improvement through the Blackfoot narrows would not only degrade the Blackfoot River but further depress the fishery quality through this section. The electric power route should not have any aquatic resource effects. The alternate railroad south of the Blackfoot narrows would have no fishery impact.

The overall accumulation of stress in the Blackfoot River tributaries from future mining activity would not only degrade onsite tributaries, but the accumulation would in turn degrade the Blackfoot River and Reservoir. These two systems contribute the main fishery in southeastern Idaho.

The proposed mining will have a large impact on Diamond Creek. Not enough is known at this time to evaluate this impact.

PART III BECKER INDUSTRIES MINING PLANS

A. South Maybe Canyon

Chapter II: Description of the Existing Environment

7. Aquatic Environment and Fisheries

Maybe Creek is a small stream that drains the watershed, but the portion of Maybe Creek in the mining area is ephemerial. Maybe Creek contains a few small size cutthroat trout with low fishery value (rated one), and the stream does receive some stress from livestock. Maybe Creek has been degraded in the past by mining activities.

Chapter III: Environmental Impacts

6. Aquatic Environment and Fisheries

The mining operation will probably eliminate the offsite fishery that is barely holding on, but this fishery has little value. The small amount of Maybe Creek water that reaches the Blackfoot River will become more degraded than it is at the present time.

B. Champ Mine

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

The Champ Mine is located in Dry Valley which has no fishery. Streams in this area are ephemerial and very little surface water reaches any major water system.

Chapter III: Environmental Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial water source, there will be no direct effects on any fishery resource. Surface water from this mining area that reaches an offsite major water system is minor. There should be no indirect offsite effects on any fishery resource.

C. Mountain Fuel Mine

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

The Mountain Fuel Mine is located in Dry Valley which contains no waters supporting a fishery. Streams in this area are ephemerial and very little surface water reaches any major water system.

Chapter III: Environmental Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial water source, there will be no direct effects on any fishery resource. Surface waters from this area, reaching offsite major water systems are minor. There should be no offsite effects on any fishery resource.

PART IV EARTH SCIENCES INCORPORATED

A. Paris - Bloomington

Chapter II: Description of Existing Environment

6. Aquatic Environment and Fisheries

The Paris - Bloomington ore body starts in the lower end of the Paris Creek drainage and ends in the Bloomington Creek drainage. The mining operation is going to be underground. Bloomington Creek contains hatchery rainbow trout and supports brook trout. Very little is known about this stream. Paris Creek contains rainbow trout and dries up in the lower segment from agricultural diversions.

The Bear River from the Wyoming border to the Cleveland Bridge is characterized by high amounts of suspended sediment and high turbidity. The river and mainstream reservoirs usually support low fishery pressure. High fishery pressure does occur in short river segments below dam, i.e., Black Canyon Access Site, Last Chance Dam, and Cove Plant. The Bear River is dominated by sucker, chub, and carp but also contains rainbow trout, cutthroat trout, whitefish, sucker, dace, shiner, sunfish, perch, and sculpin. The Bear River is the Paris - Bloomington Creeks confluence contributes little of fishery value.

Chapter III: Impacts

7. Aquatic Environment and Fisheries

Because the proposed mining operation is underground, impacts on the fisheries could be minor. The mining plan does not call for any direct stream distrubance. The exploratory tunnel is close to the stream, and sediment could reach the stream, unless measures are taken to put in water control structures and sediment catch basins.

If the underground audits or stopes tap subsurface water flows in reduced ores high in iron and sulphur, toxic water could continually discharge from the portals. The quality of waters that may be discharged from these portals is unknown at this time. If portal discharge is minor and the mining plan does not call for large waste dumps, the mining should have very little impact on the fisheries. However, the limited area in the canyon may make it difficult to adequately place waste dumps. These waste dumps could bleed sediment continually into Bloomington Creek.

PART V FMC CORPORATION MINING PLANS

A. Dry Valley Mine

Chapter II: Description of the Existing Environment

6. Aquatic Environment and Fisheries

Dry Valley, as the name implies, has very little surface water at any time of the year and contains no onsite fishery value.

Chapter III: Environment Impacts

7. Aquatic Environment and Fisheries

Because of the lack of surface water and no perennial streams within the mining area, there will be no degrading impacts on the fishery resource.

PART VI INTERNATIONAL MINERAL CORPORATION

A. Husky Number One (Stewart Canyon)

Chapter II: Description of the Existing Environment

7. Aquatic Environment and Fisheries

The Husky Number One mine is located in the Stewart Creek drainage, but waste material will also be deposited in the Maybe Creek drainage.

Stewart Creek is a small steep gradient stream fed mainly by subsurface waters. This stream also receives surface waters during periods of heavy runoff from snow melt and summer storms. Riffle and water drop (small falls) areas dominate the upper stream sections and watershed stability is considered excellent (Johnson 1974). In Stewart Flats (lower stream segment) the stream decreases in gradient and better quality pools occur. There is some damage by livestock to streambank vegetative cover and streambank stability.

Stewart Creek water is cooler during the summer than Diamond Creek and the cooler water everting Diamond Creek could be very favorable. Trout enter Stewart Creek in the fall when temperatures equalize. Also, the Stewart Creek water is in excellent condition. The stream is small, has stable waterflows, but with a very low cutthroat trout standing crop. Fishery values are low, but the stream probably contributes small numbers of cutthroat trout to Diamond Creek. A man-made wood barrier in lower Stewart Creek forms a partial fish passage block to upstream moving cutthroat trout.

South Fork Stewart Creek is a small, intermittent stream draining the southern portion of the mining lease. Stream channel gradient is steep from the headwaters to Stewart Flat where the stream loses gradient and levels out.

Diamond Creek during most of the year is a larger stream than Stewart Creek in the confluence area, but above Stewart Creek the Diamond Creek waters go subsurface during late summer and early fall. Diamond Creek has a high pool-riffle ratio but is carrying a heavier fine sediment load than is conducive to a healthy stream.

Diamond Creek is rated four but is capable of being a five and contains cutthroat trout (Henry's Lake variety), brook trout, whitefish, sculpin, and possibly rainbow trout. This stream

was once a very important tributary to the Blackfoot River but appears to have become degraded in recent years. The loss of productivity can possibly be contributed to livestock influences and changes within the beaver impoundments.

Diamond Creek is dominated by cutthroat trout. Brook trout are scattered throughout the drainage, but their main populations are in the headwaters. Diamond Creek averages about 400 native cutthroat trout and 60 brook trout per mile. The stream is stocked annually with the Henry's Lake cutthroat trout fry, but the efficiency of this stocking is unknown.

Diamond Creek supports spawning runs of cutthroat trout from the Blackfoot systems. This stream in conjunction with its tributary, Spring Creek, is probably the most important spawning tributary in the Blackfoot system.

Chapter III: Environmental Impacts

6. Aquatic Environment and Fisheries

The mining plan calls for open-pit mining along the south side of upper Stewart Creek and the headwaters of South Stewart. The open pit takes part of the streambed in upper Stewart Creek. Also, Alternate Dump B would cover about two miles of perennial and intermittent stream area in the middle Stewart Creek area. The Alternate A Dump spreads out over the upper Maybe Creek area. The effects on the aquatic environment and fisheries will depend on the final mining plan selection. All adverse impacts are unavoidable. Stewart Creek has been degraded by past mining and is presently being degraded by mining activities from prospecting activities near the Unit One Husky lease. This stress could pass into the Diamond Creek system.

Sedimentation ponds will be constructed to control excess sediment discharge. However, surface runoff retained in storage during mining operations which remains in prolonged contact with rock and waste materials could experience deterioration. At this time, not enough information is available to predict if sediment storage ponds would benefit the fisheries or what the storage pond life expectancy would be.

Considering the effects of future stream sedimentation, open-pit mining in streambottoms, and waste dumps covering major stream channels, Stewart Creek and South Stewart Creek will be heavily degraded for a long period.

The major degrading stream effects would be loss of stream channel, sedimentation, changing water patterns, possibly increased water temperatures, and loss of downstream channel and bank stability. Fish populations, although already low, will be further depressed and will probably be eliminated.

PART VII MONSANTO CORPORATION MINING PLANS

A. Henry North Continuation

Chapter II: Description of the Existing Environment

7. Aquatic Environment and Fisheries

The Little Blackfoot River drains the mining area, and stream waters are charged with CO_2 from springs. The stream has been stocked with rainbow trout, but there has been no winter carry-over. Good fishing conditions exist in the area where the stream enters the Blackfoot Reservoir. A travertine dam (falls) blocks migrant runs of spawning cutthroat trout from using the system. Brook trout may occur in the stream.

Chapter III: Environmental Impacts

6. Aquatic Environment and Fisheries

This mine disturbs 225 acres within one-half mile of the Little Blackfoot River. This disturbance plus additional roads could cause sedimentation problems in the river and reservoir. There will probably be temporary minor damages to the stream, but there should be no permanent damage.

B. Trail Creek

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

Slug Creek drains this watershed and contains a good fishery. The mining area is located in ephemerial tributaries to Slug Creek. This stream is one of the more important streams in the study area and is rated four. Livestock are causing damage to certain stream sections. Slug Creek contains cutthroat trout, brook trout, sucker, dace, and sculpin.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

The mining area is along the west side of Slug Creek, and the closest disturbed mining materials will come to the stream is about one mile. There will be no direct impact on Slug Creek. The mining area is located in ephemerial drainages, but surface waters during snow melt or storms have direct access to Slug Creek. Because Slug Creek meanders in a wide valley, the flat alluvial buffer may protect this stream from sediment moving off the hillside mining area. The pollution abatement procedures and rehabilitation accomplishments will determine if there are any long term impacts. The proposed transportation system should have no effect on the fisheries.

C. Caldwell Canyon

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

This mining area is located in ephemerial drainage and on the east side of Slug Creek whose tributaries drain the proposed mined area. This stream is a slow, meandering stream with low energy and is one of the more important streams in the study area (rated four). Livestock are causing damage in certain stream sections. Slug Creek contains cutthroat trout, brook trout, dace, and sculpin. This stream would have difficulty handling any increased sediment loads.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

The mining area is located along the east side of Slug Creek, and the closest mining disturbance will come to the stream will be about one-half mile. There will be no direct impact on Slug Creek. The mining area covers ephemerial drainages, but surface waters during snow melt or storms have direct access to Slug Creek. Because Slug Creek meanders in a wide valley, the valley buffer will offer some protection from sediment moving of the disturbed areas. The pollution abatement procedures and rehabilitation accomplishments will determine if there are any long term impacts. The transportation system should have no effect on the fisheries.

D. Blackfoot Bridge

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

The mining area lies south of the Blackfoot River about six miles above the river confluence with the Blackfoot Reservoir. The Blackfoot River meanders through the valley below the northern point of the proposed mining. The Blackfoot River contains more fish species and more fishing pressure than any other stream in the planning unit. Fish species collected were cutthroat trout, rainbow trout, brown trout, whitefish, sucker, dace, redside shiner, carp, and sculpin. The stream is rated five and receives streamside damage from livestock. These two systems (river and reservoir) combined contribute the main fishery in southeastern Idaho.

The mining area is located in ephemerial drainages and no onsite water supports a fisheries. Surface waters during snow melt and storms could reach the Blackfoot River.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface waters from the mined area may reach the Blackfoot River. If so, this would add to additive, accumulative sources of pollution from the total mining areas. One mining area, by itself, may have only minor detrimental aquatic impact, but a combination of many mining areas could badly degrade the Blackfoot system. The proposed transportation system should have no effects on the aquatic resources.

PART VIII J. R. SIMPLOT COMPANY MINING PLANS

A. North Trail Canyon

Chapter II: Description

7. Aquatic Environment and Fisheries

The North Trail leases cover an area east and south of Soda Springs. The mining area covers mainly ephemerial drainages, and no onsite water supports a fishery. Small amounts of surface waters from mined watersheds could reach the Bear River systems.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near an area containing a perennial surface water, there will be no direct effects on any fishery resource. Surface water from the mined area may reach Bear River during snow melt and storms. If so, this water would be degrading to the Bear River system, but the amount is considered minor. The transportation system should have no effect on aquatic resources.

B. Middle Sulphur Canyon

Chapter II: Description

7. Aquatic Environment and Fisheries

The Middle Sulphur leases cover an area east and south of Soda Springs. The mining area covers mainly ephemerial drainages, and no onsite water supports a fishery. Small amounts of surface waters from mined watersheds could reach the Bear River systems.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

Because the mining area is not located in or near a perennial surface water source, there will be no direct effects on any fishery resource. Surface water from the mined area may reach the Bear River system during snow melt and storms. If so, this water would be degrading to the Bear River system, but the impact is considered minor. The transportation system should have no effect on aquatic resources.

PART IX STAUFFER CHEMICAL COMPANY MINING PLANS

A. Wooley Valley Unit Three

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

Angus Creek drains Unit Three of the Stauffer mining area. Environmental conditions are well documented in Angus Creek (Platts 1970a, 1970b, 1973), and these reports could be referred to for background information. This stream is rated four and contains cutthroat trout, sucker, dace, redside shiner, and sculpin. The stream from the lower end of the Angus narrows upstream to within about 800 yards of its headwaters is dominated by populations of cutthroat trout. Downstream from the Angus narrows, the fish species composition is dominated by dace, redside shiner, and sculpin. Angus Creek is an important feeder of migrant cutthroat trout to the Blackfoot systems. The Stauffer Mining Company has recently constructed a small reservoir near the headwaters of Angus Creek which has been stocked with cutthroat trout. Trout survival and growth has been excellent, averaging about 12 inches at two years of age.

The headwaters of Angus Creek have received accelerated sediment and oils from past mining operations. The Aquatic Studies demonstrate that stream degradation is occurring from both mining and livestock grazing.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

No fish are found in the actual mining area as all streams draining Unit Three are ephemerial. The first proposed mining plan for Unit Three would disturb an additional 60 acres of land over what has been mined. Studies completed by Engineering, Soil Scientists, and Hydrologists, assuming no additional rehabilitation on the 60 acres after mining, show Unit Three would contribute 9.8 acre-feet of sediment to Angus Creek. This would have increased natural sediment rates 130 times, and the aquatic environment would have been destroyed. The first mining plans have been modified, and additional methods of sediment reduction have been incorporated. The modifications are not known at this time.

Mining activity in the headwaters of Angus Creek has already degraded the headwater stream area, and prediction is, that even with the additional sediment retards, the mining of

Unit Three is going to degrade Angus Creek downstream to the lower end of the narrows. The impact will be long term; the length depending on rehabilitation success and changes in the subsurface water pattern.

The transportation system will also cause further aquatic degradation, especially if the transportation system enters the Angus Creek narrows.

B. Rassmussen Ridge

Chapter II: Description of Existing Environment

7. Aquatic Environment and Fisheries

Angus Creek drains the Rassmussen Ridge Mining area. Environmental conditions are well documented in Angus Creek (Platts 1970a, 1970b, 1973), and these reports could be referred to for background information. This stream is rated four and contains cutthroat trout, sucker, dace, redside shiner, and sculpin. The stream from the lower end of the Angus narrows upstream to within about 800 yards of its headwaters is dominated by cutthroat trout. Downstream from the Angus narrows, the fish species composition is dominated by dace, redside shiner, and sculpin. Angus Creek is an important feeder of migrant cutthroat trout to the Blackfoot systems. The Stauffer Mining Company has recently constructed a small reservoir near the headwaters of Angus Creek which has been stocked with cutthroat trout. Trout survival and growth has been excellent, averaging about 12 inches at two years of age.

The headwaters of Angus Creek has received accelerated sediment and oils from past mining operations (Unit One). The Aquatic Studies demonstrate that stream degradation is occurring from both mining and livestock grazing.

Chapter III: Impacts

6. Aquatic Environment and Fisheries

No fish are found in the actual mining area as all streams draining Rassmussen Ridge are ephemerial. With proper sediment control, this mining area should have no effect on the aquatic resources in Angus Creek. The open-pit effects on subsurface water quantity and quality is unknown at this time as is the effect of a wind born particulate.